

IN THE SPECIFICATION

Replace the paragraph beginning on page 1, line 22,  
with the following rewritten paragraph:

*B1*  
Yoshimura, T., et al., *Appl. Phys. Lett.* 247:829  
60:268 (1992).

Replace the paragraph beginning on page 9, line 29,  
with the following rewritten paragraph:

*B2*  
The prototype system was based on the following reaction conditions: the reactor walls were heated to avoid molecule condensation on the walls; the CVD was operated in the pulse mode; the chamber base pressure was  $10^{-5}$  Torr, operation  $1-100 \times 10^{-3}$  Torr; temperature of the sample holder about  $130-450^{\circ}\text{C}$ , e.g.,  $250^{\circ}\text{C}$ , temperature of the reactor walls,  $100-400^{\circ}\text{C}$ , e.g., about  $325^{\circ}\text{C}$ ; temperature of the sublimers,  $35-300^{\circ}\text{C}$ , temperature of the bubblers,  $3-80^{\circ}\text{C}$ , time of each pulse, 3-15 minutes, cleaning pulse with argon, about 3 minutes. The final chosen dimensions of reactor were aspect ratio: 1:3, length:height ratio: 1:7. The usual value of linear expansion angle of 7 degrees was accepted to avoid expansion of steady non-uniform gas flow. The susceptor was tilted 6 degrees to decrease the effective cross section of the cell. This increases the gas velocity, thus reducing the boundary layer thickness and increasing the growth rate.

Replace the paragraph beginning on page 10, line 27,  
with the following rewritten paragraph:

Thus, the method of the invention requires providing a substrate having reactive surface sites capable of reacting with the chemically reactive group in the selected compound. Such a substrate may be provided, for example, by the process described in Fig. 2. Illustrated in Figure 2 is a reaction between a substrate **40** having an outer hydroxyl layer or a substrate **41** having an outer metal layer, with a coupling agent **42** having a first reactive group (X), which is capable of reacting with the oxide of substrate **40** or with the metal of substrate **41**; a spacer (R), which may be, for example, an alyphatic aliphatic, aromatic, inorganic or metaloorganic moiety; and a second reactive group (A), which is either identical to X or incapable of reacting with the hydroxyl- or metal-containing substrates, but still capable of reacting with the chemically reactive group in the selected compound. The reaction between the substrates **40**, **41** and the coupling agent **42** results in the formation of a substrate **44** having surface reactive sites (A), connected to it through the spacer R and a species Z, which is the product of the reaction between the substrate reactive sites and the first reactive group X.

b3

Replace the paragraph beginning on page 15, line 28,  
with the following rewritten paragraph:

Structures of alternating chromophore arrays having different electron affinities yield organic quantum confined structures. PTCDI can be regarded as an electron sink (a deep potential well) where trapped electrons in the form of radical-anions are stabilized by the carbonyls on the periphery of the large perylene pi-system. Electron barriers in this case are chromophores with lower electron affinity, e.g. NTCDA, or molecular insulators such as linear alkyl chains. Controlling the heterostructure well 'depth' or barrier 'height,' is accomplished by varying the number of times steps ii-iii are repeated with well-molecules and how many times with barrier-molecules. Furthermore, these quantum confined layers (each composed of several monolayers) can be separated one from each other by different alkane chain length ( $\text{[CH}_2\text{]}_n\text{[CH}_2\text{]}_n$ , n=2-20; in steps iii). This provides a powerful tool for formation of ~~quantum-confined~~ quantum-confined nanostructures exhibiting anisotropic electron transfer and tunneling.

Replace the paragraph beginning on page 16, line 21,  
with the following rewritten paragraph:

Fig. 12A describes a method for obtaining a ladder naphthalene derived superlattice, hereinafter P1( n=0) and

*b5*  
perylene derived ~~a~~uperlatticesuperlattice P2 (n=1). Such poly(isoindoloquinazolinedione)s, can be synthesized by vaporizing step-by-step, as described in the figure, NTCDA or PTCDA with 1,4-diamino-2,5-diamidobenzene. The final superlattices afford electronically double stranded conjugated skeletons combined with extremely stable ladder structure.

Replace the paragraph beginning on page 17, line 5, with the following rewritten paragraph:

*b6*  
Fig. 12C describes rigid-rod polymers, poly (2,6-naphthalene-benzoxazole) (P5, x=0) and poly(2,6-naphthalene-benzthiazole) (P6, x=S), which may be prepared by subliming the corresponding precursors onto acyl ~~eloride~~chloride functionalized surface.

Replace the paragraph beginning on page 17, line 26, with the following rewritten paragraph:

*b7*  
Conjugated polymers or molecular stacks are organic semiconductors by virtue of the delocalization of the pi molecular orbitals along the polymer chain or in the stacking direction. Such materials frequently exhibit electroluminescence (EL) when incorporated into a device. In a light-emitting diode (LED) device, excitation is caused by the injection of an electron into the conduction band (LUMO) and a hole into the valence band (HOMO) which recombine with emission of visible light. An optimal LED device (Fig. 17A)

should exhibit efficient charge injection (electrons and holes) at the metal/organic-layer interface, good charge transport, and efficient radiative charge-recombination. Exemplary materials are: an upper contact cathode made of aluminum, mg:ag alloy, and the like; NTCDI as the electron transport layer; PTCDI as the emitter, triarylamine, diaminocarbazole, or diphenylamine as the hole transport layer; and indium-tin-oxide as the high work function semiconductor. Fig. 17B illustrates a triamine substituted Alq that may serve as the emission layer or the electron injection layer in an OLED grown by MLE.

Replace the paragraph beginning on page 18, line 11, with the following rewritten paragraph:

All of the layers are assembled using MLE in a covalently bonded epitaxial ~~z-oriented~~ structure. The EL in the NTCDI structure is thickness/voltage tunable, and using different thicknesses of NTCDI, different color luminescence, e.g. red, yellow, and green, can be achieved.

Replace the paragraph beginning on page 20, line 27, with the following rewritten paragraph:

An organic waveguide constructed in accordance with the invention is constructed, for example, from the vertical structure: substrate, phenyl, naphthalene, perylene. An

b9  
organometallic waveguide would contain alternating layers of  
organometallic organometallic layers.